

readings for the twenty-four hours, and forms the datum line from which the ordinates to the curves are measured. If we wish to tabulate the numerical values of the ordinates from these curves a correction has to be applied to each ordinate, depending on the distance of this datum from the zero line, or line that would be made by the reflected dot when the pendulum was vertical. I submit a few of the curves for your inspection, and hope, at some future time, to bring before you some results obtained by this apparatus, and describe the manner in which the indications obtained are converted to absolute measure in adopted units of force.

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ART. XXVI.—*Experiments on Mr. Julius Dahlke's Filter.*

By Mr. J. COSMO NEWBERY.

[Read 9th December, 1867.]

At the last meeting of this Society a paper was read by Dr. Neild for Mr. Julius Dahlke, describing a new filter, which was stated to be peculiarly adapted for filtering water containing organic matter, and water which, having passed through lead pipes or vessels, contained salts of lead. And the statement that it would remove acetate of lead, and some other salts from solution without chemical action was so remarkable, and of so much importance, that I gladly undertook to try some experiments with the filter and report the results to you. I am very much pleased to be able to corroborate all Mr. Dahlke's statements, and indeed go further. Upon receiving the filter I poured into it solutions of sulphate of magnesia and common salt, and to my astonishment found only traces of these salts in the filtrate, so small that they could only be detected chemically. These salts were followed by strong acetic and hydrochloric acids, with like results, the water from each being absolutely tasteless. I finally added strong yellow sulphide of ammonium, which passed through as pure water. Upon inverting the filter and pouring in hot water, the sulphide of ammonium was discharged undecomposed, showing that though it fol-

lowed strong hydrochloric acid it never came in contact with it. After washing for some time the hydrochloric acid made its appearance.

Similar experiments were repeated several times with like results, and it was not till I added a fluid containing no water and which would not mix with water that I overcame the power of the filter to separate soluble salts from solution.

It is almost impossible to over-estimate the value of this discovery, especially as Mr. Dahlke is prepared to fit up filters capable of purifying from 10 to 20,000 gallons, which without doubt will be of great service in many parts of the country where nearly all the water is so highly charged with salt as to be unfit for either human beings or cattle. To prove what its value may be at sea, I may add that I filtered some water collected from the end of St. Kilda pier and that the filtrate contained very little more salt than Yan Yean.

It has been known for some years that most porous substances have the peculiar power of retaining a portion of the soluble salts contained in water, when used as filtering media. In 1856 it was shown by the late Mr. H. M. Witt, that when water containing soluble salts was passed through sand-beds from five to fifteen percent. of the salts were removed. It has also been proved that ordinary agricultural soil has the power of purifying sewage water from all its soluble salts and organic matter, if it is allowed to flow over a large area. Various other substances, such as ordinary charcoal, animal charcoal, magnetic oxide of iron, and the new silico-carbon filter have been described as possessing this peculiar physico-mechanical power, but none to the same degree as the substance contained in Mr. Dahlke's filter.